(Part-I)

2. Write short answers to any FOUR (4) questions: **(8)**

(i) Define IDE.

Ans A software that provides a programming environment which facilitates the programmer in writing and executing computer programs is known as an Integrated Development Environment (IDE).

(ii) Write the steps to create a C program file in the IDE of your lab computer.

Ans The following steps are used to create C program:

1. Open Code Block.
2. Click on New Project.
3. Click on Console application button.
4. Click on GO button.
5. Select C language.
6. Type a project Name, click on Next Button.
7. Click on Finish Button.
8. Now you can type your program.

(iii) How can we declare and initialize a variable?

Ans **Variable Declaration:**

We need to declare a variable before we can use it in the program. Declaring a variable includes specifying its data type and giving it a valid name. Following syntax can be followed to declare a variable.

data_type variable_name;

Variable Initialization:

Assigning value to a variable for the first time is called variable initialization. C language allows us to initialize a variable both at the time of declaration, and after declaring it. For initializing a variable at the time of declaration, we use the following general structure.

data_type variable_name = value;

(iv) **Define scanf.**

Ans scanf is a built-in function in C language that takes input from user into the variables.

(v) **Which function of C language is used to display output on screen?**

Ans printf is a built-in function in C programming language to show output on screen. Its name comes from "print formatted" that is used to print the formatted output on screen.

(vi) **Identify errors in the following code.**

```
#include<stdio.h>
void main ()
{
        int a, b, c,
        printf("Enter First Number: ");
        scanf("%d", &a);
        printf("Enter second number: ");
        scanf("%d", & b);
        a + b = c;

}
```

Ans Error:
1. Semicolon is missing after variable declaration.
2. c=a+b because destination index is always to the right side.
3. Instead of curly braces, there is used square brackets.

3. **Write short answers to any FOUR (4) questions:** **(8)**

(i) **Define selection statements.**

Ans The statements which help us to decide which statements should be executed next, on the basis of conditions, are called selection statements.

(ii) **What is sequential control?**

Ans Sequential control is the default control structure in C language. According to the sequential control, all the statements are executed in the given sequence.

(iii) Identify error in the following code segment.

```
if (a < b && b < c);
        sum = a + b + c;
else
    multiply = a * b * c;
```

Ans. Error: Semicolon is not used on the end of 'If statement'.

(iv) Write down output of the following code.

```
int x = 45;
if (x + 20 * 7 = = 455)
        printf ("Look's Good");
else
        printf ("Hope for the Best");
```

Ans Output: Hope for the Best.

(v) What is an array?

Ans An Array is a data structure that can hold multiple values of same data type. It stores all the values at contiguous locations inside the computer's memory.

(vi) What is the advantage of initializing an array at the time of declaration?

Ans An array can be initialized at the time of its declaration, or later.

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4. Write short answers to any FOUR (4) questions: **(8)**

(i) Identify the error in the following code:

```
for (int i = 0, i < 10, i++)
        printf ("%d\n", i);
```

Ans Errors: Semicolon is not used in the loop.

(ii) Write down output of the following code:

```
int i;
for (i = 34; i <= 60; i = 1 * 2)
        printf ("* ");
```

Ans. Output: *

(iii) Define function.

Ans A function is a block of statements that performs a particular task.

(iv) Describe the advantages of using functions.

Ans Advantages of using functions are:
1. Reusability   2. Separation of tasks
3. Handling the complexity of the problem
4. Readability

(v) Identify the errors in the following code segments.

```
void sum (int a, int b)
{
        return a + b;
}
```

Ans Errors: If function return type is void then its return nothing.

(vi) Write down output of the following code segments.

```
int xyz (int n)
{
        return n + n;
}
int main ()
{
        int p = xyx (5) ;
        p = xyz (p);
        printf ("%d ", p);
}
```

Ans Output: 20

(Part-II)

NOTE: Attempt any TWO (2) questions.

Q.5. Differentiate between constants and variables in detail. (8)

Ans **Constants:**

Constants are the values that cannot be changed by a program e.g., 5, 75.7, 1500, etc. In C language, primarily we have three types of constants:

1. Integer Constants:

These are the values without a decimal point e.g., 7, 1256, 30100, 55555, –54, –2349, etc. They can be positive or negative. If the value is not preceded by a sign, it is considered as positive.

2. Real Constants:

These are the values including a decimal point e.g., 3.14, 15.3333, 75.0, –1575.76, –7941.2345, etc. They can also be positive or negative.

3. Character Constants:

Any single small case letter, upper case letter, digit, punctuation mark, special symbol enclosed within ' ' is considered a character constant e.g., '5', '7', 'a', 'X', '!', ';', etc.

Variables:

A variable is actually a name given to a memory location, as the data is physically stored inside the computer's memory. The value of a variable can be changed in a program. It means that, in a program, if a variable contains value 5, then later we can give it another value that replaces the value 5.

Each variable has a unique name called identifier and has a data type. Data type describes the type of data that can be stored in the variable. C language has different data types such as *int*, *float* and *char*. The types *int*, *float* and *char* are used to store integer, real and character data, respectively. Following table shows the matching data types in C language, against different types of data.

Type of Data	Matching Data Type in C language	Sample Values
Integer	*int*	123
Real	*float*	23.5
Character	*char*	'a'

Table: Matching data types against different types of data.

Q.6. Write a program that displays larger one out of the three given numbers. (8)

Ans include <stdio.h>
void main ()
{
        int n1, n2, n3;

```c
printf ("Enter three numbers");
scanf ("%d%d%d", &n1, &n2, &n3);
if (n1 > n2 && n1 > n3)
    printf ("The largest number is %d", n1);
else if (n2 > n3 && n2 > n1)
    printf ("The largest number is %d", n2);
else
    printf ("The largest number is %d", n3);
}
```

Q.7. Define function. Write its types. (8)

Ans Function:

A function is a block of statements which performs a particular task, *e.g.*, printf is a function that is used to display anything on computer screen, scanf is another function that is used to take input from the user. Each program has a main function which performs the tasks programmed by the user. Similarly, we can write other functions and use them multiple times.

Types of Functions:

There are basically two types of functions:

1. Built-in Functions:

The functions which are available in C Standard Library are called built-in functions. These functions perform commonly used mathematical calculations, string operations, input / output operations, etc. For example, *printf* and *scanf* are built-in functions.

2. User Defined Functions:

The functions which are defined by a programmer are called user defined functions.